

Appln. No. 10/706,202  
Amdt. Dated January 5, 2006

### REMARKS/ARGUMENTS

On November 29, 2005, Applicants submitted a full and complete Response to the non-final Office Action dated July 29, 2005 in a *bona fide* attempt to advance the application towards allowance. In this Office Action, Claims 1-26, 29-36 and 38-43 were rejected as being anticipated by U.S. Published Patent Application 2001/0031793 (hereinafter *Singleton*), and furthermore, Claims 27 and 44 were rejected as being obvious by the combination of *Singleton* with U.S. Patent No. 6,465,530 (hereinafter *Roy-Auberger*).

The present Amendment is submitted in response to a phone call from the Examiner to the undersigned which took place on January 3, 2006. Applicants appreciate the time the Examiner took to discuss the present application with the undersigned over the phone on January 3, 2006. During the phone conversation, Claims 6 and 35 were discussed based on the anticipatory rejection over the *Singleton* reference which was cited in the Office Action dated July 29, 2005 by the Examiner. Applicants agreed to submit this amendment to further this application towards allowance. Applicants believe that the present amendment which adopts the gist of the conversation with the Examiner distinguishes the present invention from the teaching of the *Singleton* reference, and further believe that independent Claims 6 and 35, as amended, and their respective dependent claims are patentable over the art of record.

#### Status of the Claims

By this response, Claim 6, 14, 18, 20-22, 27 and 35 are currently amended.

The amendment of Claim 6 narrows Step C). Amendment to Claim 6 is supported by the application as filed, for example by originally-filed Claim 20 and paragraphs [0019] and [0065] of the specification as filed.

The amendment of Claim 14 is to improve claim form (i.e., removes an extra 'or' in the list of techniques for Step (B)) and does not change the scope of this claim.

The amendment of Claims 18 and 20 modifies the calcination range of Step C) with a specific calcination temperature range with is narrower than the range in Claim 6 from which these claims directly or indirectly depend. Support for this amendment in Claims 18 and 20 is explicit and implicit in paragraphs [0019], [0059] and [0065] of the specification as filed.

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The amendment of Claims 21 and 22 redirects their dependency from Claim 20 and 21 respectively to Claim 6. Such amendment is supported by the application as filed, for example by paragraph [0020] of the specification as filed.

Furthermore, Claim 27 was amended to remove the word 'about' in front of '900°C' to prevent any possible issue under 35 U.S.C. § 112 (since the claim from which it depends cover a temperature to 900°C).

The amendment of Claim 35 adds a calcination step with a specific calcination temperature range, and is supported by the specification as filed, for example by originally-filed paragraphs [0019] and [0059].

Furthermore, Applicants added new claims 45 and 46 which depend from Claim 35. Support for new Claim 45 is explicit and implicit in paragraphs [0019], [0059] and [0065] of the specification as filed. New Claim 46 is implicitly supported by the application as filed, for example by the disclosed method of preparation of support Examples 4-8 (see Tables 2 and 3 in the Applicants' specification as filed).

Claims 1-27, 29-36 and 38-46 are currently pending, in which Claim 6 is an independent claim from which Claims 1-5 and 7-27 depend, and Claim 35 is an independent claim from which Claims 29-34, 36 and 38-46 depend.

***Singleton does not anticipate Claim 6 and its dependent Claims 1-5 and 7-26***

By this reply, Applicants amended Step C) of Claim 6 as follows: "calcining the deposited alumina precursor between 500°C and 900°C to form the hydrothermally stable modified alumina support", in order to narrow the independent claim by requiring a range of temperature during calcination of the alumina precursor onto which the modifying agent has been deposited.

Applicants further amended Claims 18 and 20 to narrow the calcination range of Step C), as the previous calcination temperature range in these claims were broader than that recited in currently-amended Claim 6 from which they ultimately depend.

Applicants respectfully traverse the Examiner's rejection of independent Claim 6 and its dependent Claims 1-5 and 7-26, and submit that Claims 1-26 are not anticipated by *Singleton*.

With respect to *Singleton*'s teaching regarding the doping of alumina, *Singleton* only discloses the doping of alumina with lanthanum oxide and/or barium oxide to provide a more thermally stable alumina support. The following elements: lanthanum and barium in the dopant have

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atomic volumes falling well outside of the atomic volume range recited in Claim 6, and thus *Singleton*'s teaching on the dopant does not anticipate Claim 6.

With respect to cobalt which has an atomic volume falling inside the atomic volume range recited in Claim 6 and which is impregnated on doped alumina in *Singleton*, *Singleton* clearly regards cobalt as the catalytic metal of the catalyst and not a modifying agent for the alumina support as set forth in the present invention. *Singleton* does not disclose or hint that cobalt may be used to provide greater thermal stability to the alumina support, and *Singleton* certainly does not disclose or hint that cobalt may be used to provide greater *hydrothermal* stability to the alumina support. After *Singleton* impregnates cobalt nitrate onto alumina after the alumina has been doped, *Singleton* further teaches calcining the cobalt-impregnated alumina at a temperature held at approximately 250-400°C with a specific example carried out at 300°C (see *Singleton* Page 3, paragraphs [0034] and [0035]). Thus, the temperature used during calcinations after cobalt impregnation of alumina in *Singleton* is well below the temperature range recited in currently-amended Claim 6. Furthermore, *Singleton* teaches that the successive exposure of the catalyst to high temperatures can cause an undesirable encapsulation of cobalt particles (*Singleton* Page 2, paragraph [0015]), and for that reason, one having ordinary skill in the art would presume that *Singleton* would not find desirable to calcine the cobalt-impregnated alumina at the high temperatures recited in Claim 6 of the present application, as doing so would result in a less performing catalyst. Thus, *Singleton* does not teach nor desire calcining the cobalt-impregnated alumina at the high temperatures recited in Claim 6 of the present application. Thus, with respect to cobalt addition to the alumina precursor, *Singleton* does not anticipate Claim 6.

Furthermore, as it was earlier stated in the Response dated November 29, 2005, there is also no teaching nor suggestion in *Singleton* that it would be desirable to 'dope' alumina to obtain a hydrothermally stable alumina support, in which hydrothermal stability not only encompasses stability under high temperature but also in the presence of *steam* (i.e., water vapor). Applicants would like to reiterate the argument presented in the previous Response that, based on *Singleton* as a whole, one having ordinary skill in the art is completely without notice of this important *hydrothermal* effect on the alumina support and is not provided enough guidance in *Singleton* on how to address it.

With respect to aluminum (which has an atomic volume which falls within the range recited in Claim 6) as one of the possible elements comprised in the modifying agent, Claim 6 then requires

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the use of two aluminum-containing materials: the modifying agent comprising aluminum and the alumina precursor in the method of preparation of the stable support. Singleton does not teach nor suggest the use of two compounds containing aluminum to make the doped alumina. Moreover, Applicants further showed surprising results in terms of steam resistance with the aluminum-modified alumina supports Examples 4-6 compared to the 'unmodified' alumina Example 1 (see steaming test results in Table 3 in Applicants' specification as filed). Applicants demonstrated that the calcination of an aluminum-containing modifying agent deposited onto an alumina provided a significant improvement in the ability of the modified alumina to sustain an exposure to steam. Thus, with respect to aluminum addition to the alumina precursor, *Singleton* does not anticipate Claim 6.

In view of all the recitations in Claims 6 that are neither taught nor suggested expressly or implicitly by *Singleton*, and further in view of the lack of guidance from *Singleton* to arrive to the present invention for Applicants' intended purpose, Applicants submit that *Singleton* does not put the public in possession of the use of the Applicants' present claimed process of Claim 6. Applicants respectfully request that the Examiner withdraws the § 102 rejection on Claim 6 and its respective dependent Claims 1-5 and 7-26.

***Singleton does not anticipate Claim 35 and its dependent Claims 29-34, 36 & 38-43***

Applicants amended Claim 35 to now recite the following limitation "depositing a modifying agent precursor comprising an aluminum salt, an aluminum hydroxide, or mixtures thereof, to an alumina precursor, and calcining the deposited alumina precursor between 500°C and 900°C", in order to narrow the independent claim by requiring a calcination of the alumina precursor onto which the modifying agent has been deposited to be carried out with a specific temperature range.

Applicants respectfully traverse the Examiner's rejection of independent Claim 35 and its dependent Claims 29-34, 36 & 38-43, and submit that Claims 29-36 & 38-43 are not anticipated by *Singleton*.

As stated earlier, *Singleton* does not teach nor suggest the doping of alumina with aluminum which comprises the use of *two compounds comprising aluminum* (that is to say, an alumina precursor and a modifying agent precursor) in making the doped alumina. *Singleton* provides only aluminum alkoxide as the precursor for the alumina structure in the support. As mentioned earlier, Applicants have further demonstrated unexpected results with respect to steam resistance of the aluminum-modified alumina (See for example Table 3 in Applicants' specification) compared to the unmodified alumina.

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In view of all the recitations in Claim 35 that are neither taught nor suggested expressly or implicitly by *Singleton*, Applicants argue that *Singleton* does not put the public in possession of the use of the Applicants' present claimed process of Claim 35. Applicants thus submit that *Singleton* does not anticipate Claim 35 for the reasons stated above, and respectfully request that the Examiner withdraws the § 102 rejection on Claim 35 and its respective dependent Claims 29-34, 36 and 38-44.

***Claims 27 and 44 are patentable over the combination of Singleton with Roy-Auberger***

In the filed Response dated November 29, 2005, Applicants believed that they have fully responded to the rejection of Claims 27 and 44 under § 103 over *Singleton* in view of *Roy-Auberger*. Applicants further believe that the current amendment of Claim 6 and 35 from which Claims 27 and 44 respectively depend further distinguish the claimed invention of Claims 27 and 44 from the teachings of both cited references. Applicants maintain that the combination of *Singleton* with *Roy-Auberger* cited by the Examiner still fails to teach or suggest all of the elements recited in these rejected claims, as *Roy-Auberger* does not cure the deficiencies and missing elements in *Singleton*'s teachings; and that both references fail to address the problem Applicants are addressing.

Applicants respectfully maintain their traversal of the Examiner's obviousness rejection and respectfully request the withdrawal of the 103(a) rejection on Claims 27 and 44.

**New Claims 45 and 46 are allowable.**

Applicants further added new claim 45 and 46 which are dependent upon currently-amended independent Claim 35, in order to cover additional embodiments to which Applicants are entitled. Each of the new claims 45 and 46 covers a narrower range of calcination temperature than what is recited in Claim 35. Applicants submit that the previous cancellation of two claims (Claims 28 and 37) is sufficient to cover these two new claims. Applicants further submit that new Claims 45 and 46 are allowable because each contains all elements of independent Claim 35, and independent Claim 35 is allowable.

**Conclusion**

Applicants respectfully request the Examiner to consider this claim amendment which adopts the narrowing language of the two independent claims which was discussed with the Examiner during a phone call on January 3, 2005. Applicants believe that no new matter is

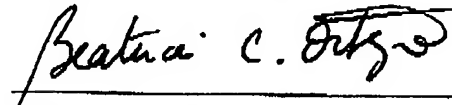
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introduced by way of this amendment, and that this amendment places the application in condition for allowance. Favorable action at the Examiner's earliest convenience is respectfully solicited.

Although Applicants believe that they fully responded to the Office Action dated July 29, 2005 by filing a Response dated November 29, 2005, should a petition for extension of time be necessary in order for this paper to be deemed timely filed, please consider this a petition therefore. If any fee is due, please appropriately charge such fee to Deposit Account Number 16-1575 of ConocoPhillips Company, Houston, Texas.

Should there be any remaining issue which the Examiner believes would possibly be resolved by a conversation, the Examiner is invited to call the undersigned at (281) 293-4751 so that further delay in a Notice of Allowance can be avoided.

Respectfully submitted,



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